

# Practice of Programming using Java

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# Packages

Related classes can be packaged in a package  
In source file, mention the package to which the classes belong

```
package mypackage;  
class A { }  
class B { }
```

classes A and B are then considered to be part of package  
mypackage

# Storing Packages

Move the .class files in a package under a directory with the same name as that of the package

In this case, the location will be  
mypackage/A.class, B.class

The directory mypackage should be locatable through environment variable CLASSPATH

# Visibility Rules

Public classes and members have visibility inside and out of package

Private members have visibility inside the defining classes only

Protected members are visible inside the defining classes and from subclasses

Default visibility is package visibility

# Jar files

Java cf myfile.jar \*.class README

C for create and f for filename (not stdout)

Creates a jar file from \*.class and README

Java tf myfile.jar

Table of content of the jarfile is printed

Java xf myfile.jar selectedfiles..

Extracts selected files from the jar bundle

Default- extract all

Java uf myfile.jar README

Update/add README to the given jar file

# Applets

## Interactive Web pages

A classfile can be included in an html file

```
import java.awt.*;
import java.applet.*;
public class HelloWorldApp extends Applet {
    public void init () {
        setBackground (Color.cyan);
    }
    public void paint (Graphics g) {
        g.drawString ("Hello World!!", 10,10);
        showStatus ("Applet Working!");
    }
}
```

# Including Applets in html

```
<HTML>
```

```
<BODY>
```

```
<APPLET CODE = "HelloWorldApp.class" WIDTH = 300 HEIGHT=300>
```

```
</APPLET>
```

```
</BODY>
```

```
</HTML>
```

use appletviewer to view the applet, or browser enabled with java canview the html page with applet

# Tracking Mouse Events: Observer Pattern

## Interfaces

MouseListener

MouseMotionListener

Register listeners

Events are tracked by the runtime and delivered to listener objects

Listener objects specify handles